

Name _____ Period _____

AP Biology – Unit 2.2 Quiz

1. Suppose you analyze several different species within an ecosystem and find that their current levels of nucleic acid are far lower than usual but their levels of carbohydrate and lipid are normal. Which matter cycle is most likely to have been disrupted?

- A. The Carbon Cycle
- B. The Nitrogen Cycle
- C. The Water Cycle
- D. The Sulfur Cycle

2. Which of the following matter cycles would have the greatest impact on organism biomass if it were disrupted?

- A. The nitrogen cycle because DNA has a vast amount of nitrogen.
- B. The sulfur cycle because proteins have a vast amount of sulfur.
- C. The carbon cycle because carbon compounds make up the majority of biomass.
- D. The water cycle because water makes up the majority of biomass.

3. Which process is least significant to the nitrogen cycle?

- A. Decomposition
- B. Photosynthesis
- C. Excretion
- D. Soil Bacteria & Plant Symbiosis

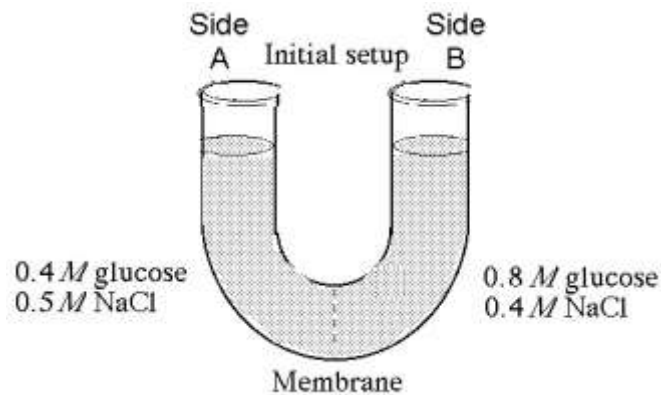
4. Water can be thought of as a universal solvent. The property most responsible for this phenomenon is

- A. water has a higher density as a liquid than a solid.
- B. water is highly cohesive.
- C. water has a high specific heat, requiring a large quantity of energy to change phases.
- D. water forms hydrogen bonds as a result of its polarity.

5. Which of the following would likely move through the lipid bilayer of a plasma membrane most rapidly?

- A. CO₂
- B. An amino acid
- C. Glucose
- D. K⁺

The solutions in the arms of a U-tube are separated at the bottom of the tube by a selectively permeable membrane. The membrane is permeable to sodium chloride but not to glucose. Side A is filled with a solution of 0.4 *M* glucose and 0.5 *M* sodium chloride (NaCl), and side B is filled with a solution containing 0.8 *M* glucose and 0.4 *M* sodium chloride. Initially, the volume in both arms is the same. Refer to the figure to answer the following questions.



6. If you examine side A after three days, you should find
- A. a decrease in the concentration of NaCl and glucose and an increase in the water level.
 - B. a decrease in the concentration of NaCl, an increase in water level, and no change in the concentration of glucose.
 - C. no net change in the system.
 - D. a decrease in the concentration of NaCl and a decrease in the water level.
7. Cotransport relies on which of the following LEAST?
- A. ATP energy
 - B. diffusion
 - C. aquaporins
 - D. concentration gradients
8. A pathogen is enveloped by an immune cell and destroyed within by hydrolytic enzymes. Which process is most used during this event?
- A. Facilitated diffusion
 - B. Exocytosis
 - C. Pinocytosis
 - D. Phagocytosis

9. Calculate the water potential for a 0.2 M solution of sucrose at 20°C in a closed beaker with a pressure potential of 2 bars. Show all your work and provide answer to the nearest hundredth.

Answer Sheet

_____ 1. _____ 2. _____ 3. _____ 4.

_____ 5. _____ 6. _____ 7. _____ 8.

+ / - _____ 9. (circle whether positive or negative if a non-zero answer)